

ABSTRACT

A pressure relief valve has a housing fluidly connected to a pressurized system line carrying a system fluid. The housing carries a moveable piston and a valve member that both move between closed and open positions. The piston defines an upper chamber and a lower chamber within the housing. A pressurized fluid is supplied to the upper chamber to bias the piston toward the closed position. After the relief valve opens from excessive system pressure, the pressurized fluid is injected into the lower chamber to delay the return of the piston to the closed position. Initially, the fluid in the lower chamber flows through a check valve while the piston returns to the closed position. Then the fluid vent in the lower chamber vents from the lower chamber as the piston and valve member approach the closed position.